

CLAIMS

What is claimed is:

1. A chain tensioner, comprising:
 - a tensioner piston bearing upon a chain;
 - a cylinder guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber for receiving hydraulic fluid;
 - a leakage gap for migration of hydraulic fluid from the pressure chamber;
 - and
 - a control member for at least reducing the leakage gap in size, when a pressure in the pressure chamber increases.
2. The tensioner of claim 1, wherein the control member is a valve having a valve body for bounding the leakage gap, said valve body being configured for displacement to at least reduce the leakage gap in size, when the pressure in the pressure chamber increases.
3. The tensioner of claim 2, wherein the valve body clears the leakage gap, when the pressure in the pressure chamber drops below a critical lower level, and at least reduces the leakage gap in size, when the pressure in the pressure chamber exceeds a critical upper level.
4. The tensioner of claim 2, and further comprising a first stop, wherein the valve body clears the leakage gap, when abutting against the first stop.

5. The tensioner of claim 4, wherein the first stop is formed by a valve seat, which defines the leakage gap in concert with the valve body.

6. The tensioner of claim 4, and further comprising a valve spring for biasing the valve body against the first stop.

7. The tensioner of claim 2, and further comprising a second stop, wherein the valve body is configured to abut the second stop, when the pressure in the pressure chamber increases to thereby at least reduce the leakage gap in size.

8. The tensioner of claim 7, wherein the second stop forms a valve seat for the valve body.

9. The tensioner of claim 6, wherein the valve body is moved away from the first stop in opposition to a spring action applied by the valve spring, as the pressure in the pressure chamber increases.

10. The tensioner of claim 1, wherein the control member is a valve in communication with the pressure chamber.

11. The tensioner of claim 1, wherein the leakage gap is subdivided in a first leakage gap portion and a second leakage gap portion, wherein the control member clears the first leakage gap portion, when the pressure in the pressure chamber drops below a critical lower level, and at least reduces the second leakage gap portion in size, when the pressure in the pressure chamber exceeds a critical upper level.

12. The tensioner of claim 11, wherein the control member is a valve having a valve body which closes the second leakage gap portion, when the pressure in the pressure chamber exceeds the critical upper level.

13. The tensioner of claim 12, and further comprising a first stop, wherein the valve body abuts against the first stop to clear the second leakage gap portion, when the pressure in the pressure chamber drops below the critical lower level.

14. The tensioner of claim 12, and further comprising a second stop, wherein the valve body abuts against the second stop to at least reduce the second leakage gap portion in size, when the pressure in the pressure chamber exceeds the critical upper level.

15. The tensioner of claim 13, and further comprising a valve spring for biasing the valve body against the first stop.

16. The tensioner of claim 13, wherein the first stop is formed as valve seat for the valve body.

17. The tensioner of claim 14, wherein the second stop is formed as valve seat for the valve body.

18. The tensioner of claim 13, and further comprising a second stop, wherein the valve body abuts against the second stop to at least reduce the second leakage gap in size, when the pressure in the pressure chamber exceeds the critical upper level, wherein the valve body is disposed between the first and second stops.

19. The tensioner of claim 2, wherein the valve body is configured as plunger, which is guided in the cylinder for longitudinal displacement.

20. The tensioner of claim 19, wherein the plunger defines the leakage gap in concert with the cylinder.

21. The tensioner of claim 19, and further comprising a valve spring for biasing the plunger in a direction toward a first stop, said piston clearing the leakage gap, when abutting against the first stop.

22. The tensioner of claim 21, wherein the plunger is moved away from the first stop to abut against a second stop, when the pressure in the pressure chamber exceeds the upper critical level, to thereby close the leakage gap.

23. The tensioner of claim 22, wherein the second stop has a seat area for the plunger, whereby the piston is configured to tightly bear against the seat area.

24. The tensioner of claim 19, and further comprising a check valve integrated in the plunger, so that the plunger and the check valve form a structural unit.

25. A chain tensioner, comprising:

a tensioner piston bearing upon a chain;

a cylinder guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber for receiving hydraulic fluid; and

a control member for regulating a fluid flow through a leakage gap to the outside in dependence on a pressure in the pressure chamber to thereby adjust a damping behavior during operation.

26. The chain tensioner of claim 25, wherein the control member is movable between first and second stops and spring-biased to seek a position against a first stop, wherein the first stop has passageways to allow seepage of hydraulic fluid through the leakage gap.

27. The chain tensioner of claim 26, wherein the first seat is formed with circumferential grooves to define the passageways.

28. The chain tensioner of claim 26, wherein the control member moves toward the second stop to at least reduce the fluid flow through the leakage gap, as the pressure in the pressure chamber rises.

29. The chain tensioner of claim 26, wherein the control member is a ball valve disposed between the first and second stops.

30. The chain tensioner of claim 26, wherein the control member is a plunger disposed between the first and second stops.

31. A chain tensioner, comprising:

- a tensioner piston bearing upon a chain;
- a cylinder guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber for receiving hydraulic fluid;
- a first leakage gap formed between adjacent wall surfaces of the cylinder and the piston for migration of hydraulic fluid from the pressure chamber;
- a second leakage gap for migration of hydraulic fluid from the pressure chamber; and
- a control member for regulating a fluid flow through the second leakage gap in dependence on a pressure in the pressure chamber.

32. The chain tensioner of claim 31, wherein the control member reduces a fluid flow through the second leakage gap, as the pressure in the pressure chamber rises.

33. The chain tensioner of claim 32, wherein the control member closes the second leakage gap, when the pressure in the pressure chamber exceeds an upper limit.